Data Limitations and Validation Report

for Environmental Groundwater Samples

Collected from the Argonne National Laboratory - West

Scoville, ID

Case No. 93090304

SDG. No. 93090304

Target Analyte List (TAL) Iron

Three Aqueous Samples

Validated by:

3-6-96

Ricky C. DePaul
Data Validation
Reviewer

Approved by:

3-6-96

Joseph A. Samchuck
Data Validation Quality
Assurance Officer

A. TITLE:

INORGANIC DATA LIMITATIONS and VALIDATION REPORT

Project Site:	Waters from Argonne National Laboratory - West
Sample Type:	Aqueous samples
Analysis Type:	Iron
Case No.:	93090304
SDG. No.:	93090304

B. INTRODUCTION:

A complete review, following the procedures outlined in SMO-SOP-12.1.5[1], was performed on the data package, labeled Case No. 93090304, SDG# 93090304, submitted by Biospherics Incorporated. Based upon the information available for review, it appears as thought, the laboratory analyzed the aforementioned water samples from the Argonne National Laboratory - West according to SW846 Method 6010 analytical protocols. The deliverable format does not comply with data package requirements pursuant with Level A validation protocol. The samples contained in this SDG were analyzed for iron via Inductively Coupled Plasma (ICP) methodology.

C. CONTRACT AND TECHNICAL REVIEW:

Site:	Waters from Argonne National Laboratory - West
Type:	Iron
Case No.:	93090304
SDG No.:	93090304
Laboratory:	Biospherics Incorporated

Sample Identification:

FIELD ID	LAB ID
ANL-206-93	93090304-38
ANL-210-93	93090304-44
ANL-214-93	93090304-49

CTR COMMENTS:

1. The laboratory did not provide Inductively Coupled Plasma (ICP) linear range information.

2. The laboratory incorrectly reported a negative result for iron in sample ANL-214-93. The negative result for iron in this sample is misrepresentative and should not be used for quantitative purposes.

3. Iron analyses were conducted via Inductively Coupled Plasma (ICP) methodology.

4. Analyses for aluminum, calcium, and magnesium were not requested and therefore, not performed. Hence, the sample data could not be fully evaluated for Inductively Coupled Plasma (ICP) interference affects stemming from potentially high concentrations of these analytes.

5. Initial and/or Continuing Calibration Verification (ICV/CCV) Percent Recoveries (%Rs) for iron were within control limits. Thus, no validation actions were warranted based upon this quality control parameter.

6. No positive blank contamination was present in the laboratory method blanks. Thus, no validation actions were warranted. It is not possible to determine the impact of negative blank contamination on associated sample data as Instrument Detection Limits (IDLs) have not been provided by the laboratory with this data package.

7. Chain-of-Custody (C.O.C.) Forms were not provided as applicable to the samples in this SDG. Hence, the sample data could not be evaluated for holding time requirements. The samples appear to have been analyzed twelve days after receipt at the laboratory. No further conclusions can be drawn based upon the information available for review. The validator does not have access to information regarding proper sample preservation for the samples included in this data set.

8. The aqueous matrix spike recovery for iron was below the lower quality control limit as noted on the Form 5A. A transcription error appears to have occurred regarding the correct reporting of the unspiked sample result for sample ANL-214-93. It appears as though the laboratory may have incorrectly indicated the spiked sample identification number on the spike summary form. The unspiked result for iron on the Form 5A does not match the reported result as noted on the Form I for this analyte in this sample. This anomaly is noted here for completeness. The raw data did not provide clarification as corresponding laboratory ID cross references were not provided. Analysis times were not provided in the raw data. The laboratory could not be contacted for resolution of this issue.

9. The aqueous Laboratory Control Sample (LCS) recovery for iron was within the 80-120% quality control limits. Thus, no validation actions were warranted for this quality control parameter.

10. The aqueous preparation log for the waters in this SDG referenced only sample 93090304 and completely omitted any reference to the remaining two samples in this SDG. Furthermore, the laboratory failed to complete the sample preparation aliquot used for sample 93090304 as noted on this form. The form is grossly incomplete and does not represent any useful information. Hence, the sample data could not be evaluated for this parameter.

11. The result for iron as noted in sample ANL-214-93 appears to have been transcribed incorrectly as reported by the laboratory. The raw data average value for iron in this sample appears to be -61.0 ug/L. The validator does not have access to the correct IDL for this analyte. The reported detection limit should not be used as a quantitative value for statistical purposes. This nondetected value presented as such provides no useful information based upon conventional protocol used for reporting nondetected sample results and could bias overall samples results for this analyte if this value were treated as an acceptable result. This anomaly is noted here for completeness.

12. Dilution factors are not provided by the laboratory. Hence, the validator has no indication as to the potential impact of blank contamination on reported values. Nor can the validator evaluate the reported sample results for correctness relative to raw data values for this analyte. Neither the Form XIV or raw data injection log sheet provide this important information.

13. Laboratory duplicate imprecision was noted for iron. The difference between sample and duplicate results exceeded the CRDL for this analyte when sample and/or duplicate results were < 5X CRDL.

D. DATA LIMITATION OVERVIEW:

a. Summary of Qualified Data

Sample ANL-206-93 could not be fully evaluated given the limitations of the data package deliverable. Sample data qualifications were not made for the aforementioned quality control noncompliances (anomalies) as it is not possible to ascertain a cumulative affect of the type or severity of problems impacting sample data quality based upon the unacceptable format of the data package deliverable.

Sample ANL-210-93 could not be fully evaluated given the limitations of the data package deliverable. Sample data qualifications were not made for the aforementioned quality control noncompliances (anomalies) as it is not possible to ascertain a cumulative affect of the type or severity of problems impacting sample data quality based upon the unacceptable format of the data package deliverable.

Sample ANL-214-93 could not be fully evaluated given the limitations of the data package deliverable. Sample data qualifications were not made for the aforementioned quality control noncompliances (anomalies) as it is not possible to ascertain a cumulative affect of the type or severity of problems impacting sample data quality based upon the unacceptable format of the data package deliverable.

E. LABORATORY APPRAISAL:

The data package was presented in a format which could not be fully evaluated as per the validation review requirements as defined by Level A validation review criteria. Qualifications applied to the data serve to indicate problems which could effectively be identified based upon specific noncompliant quality control parameters. Various anomalies and inconsistencies prevented a logical and systematic evaluation process of identifying and qualifying analytical results with a given amount of certainty. The following notable items illustrate the systematic problems associated with this deliverable:

- inconsistent reporting of analytical results (i.e., results reported both above and below detection limits referenced in the SOW).
- negative results reported on the Form Is
- absence of laboratory qualifications
- omissions of various analytes on quality control summary forms

Additionally, deficiencies noted with data presentation and reporting may not preclude additional, more severe problems with the data which could in affect render the data non usable. It is not possible to make an accurate and complete assessment of the data. Furthermore, overall data usability cannot be appraised for this data set as a result of problems noted with the deliverable.

F. REFERENCES:

1. Standard Operating Procedure For Inorganic Data Validation, "SMO-SOP-12.1.5", Environmental Restoration Program, EG&G, Inc., 1991.

APPENDIX A

RESULTS AS REPORTED BY THE LABORATORY

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

ANL-206-93

Lab Name: BIOSPHERICS INCORPORATED Contract: ARGONNE

Lab Code: 93090304 Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 93090304-38

Level (low/med): LOW Date Received: 09/03/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	153			P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

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Comments:

EBR II NO1

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

ANL-210-93

Lab Name: BIOSPHERICS INCORPORATED Contract: ARGONNE

Lab Code: 93090304 Case No.: SAS No.: SDG No.:

Matrix (soil/water): WATER Lab Sample ID: 93090304-44

Level (low/med): LOW Date Received: 09/03/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	346	U		P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

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INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

ANL-214-93

Lab Name: BIOSPHERICS INCORPORATED Contract: ARGONNE

Lab Code: 93090304 Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: 93090304-49

Level (low/med): LOW Date Received: 09/03/93

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium				
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	-64	U		P
7439-92-1	Lead				
7439-95-4	Magnesium				
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium				
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium				
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
	Cyanide				

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